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ABSTRACT

A discussion is presented of the process of resource allocation and the use of performance indicators in public sector higher education in Britain. First, background is presented on the method of providing resources to institutions of advanced further education (AFE) and non-advanced further education (NAFE) on the basis of pooled recurrent expenditures and the distribution of funds according to categories of work and student-staff ratios. Next, the operation of the student-staff ratio is explained, and the tendencies arising from established rules regarding ratios are highlighted. This section outlines the inherent conflict in the system of assigning resources on the basis of student-staff ratios, indicating that successful performance for a college administration committed to constraining public expenditure would be to enroll as many students as possible, teach them for as few hours as possible in large classes, and make instructors teach the maximum number of hours permitted by their conditions of service. Alternatively, the self-interest of administrators and faculty would dictate the enrollment of as many students as possible in courses at as high an academic level as possible, and to teach students for the most hours in the smallest classes possible. The discussion of resource allocation is then placed in the context of the traditional management control model and an alternative model based on political negotiation and control. Finally, the limitations of an all-embracing performance criteria in higher education are articulated. (HB)

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Resource Utilisation Performance Indicators in the Public Sector of Higher Education

or

Never Mind the Technique Feel the Structure

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and

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A paper delivered to the Society for Research into Higher Education Annual Conference on "Indicators of Performance", December, 1979.

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ABSTRACT

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The paper begins by reviewing the scope of higher education provision outside the universities, and describing the role and functioning of the Pooling Committee for Advanced Further Education. The main performance indicator recommended by the Pooling Committee is a student-staff ratio based on curricular hours calculations. This SSR is increasingly being applied also to non-advanced further education. Another major constraint on the operation of colleges and polytechnics is the Burnham salary agreement, which ties salaries to aggregated student hours weighted by academic level. Burnham and the Pooling Committee SSR make conflicting demands, and this conflict is demonstrated by the derivation of 'rules for successful performance' implied by each approach.

Both Burnham and the Pooling Committee SSR depend fundamentally on the timetabled curricular hour involving direct student-staff contact. Thus neither approach can adequately cope with unorthodox teaching/learning modes such as 'open learning' or 'distance learning'.

Furthermore these indicators are not fully understood by many who use them to guide resource allocation. Thus the main aim of budgetary decisions becomes the minimisation of expenditure (thrift) rather than the maximisation of value for money (economic return). In these circumstances any attempt to derive other more sophisticated performance indicators will only compound the problem.

The root of the problem is a misguided assumption about the nature of management control. The conventional model of control implicitly assumes that performance can be measured, standards can be set, and that negative feedback mechanisms can be constructed to adjust performance to standards. If, as seems probable, this model is either inappropriate or undesirable for many educational situations, then an alternative political model of control is required. This model would focus attention on the processes of bargaining and negotiation which determine resource allocation in the political structure of the system under consideration.

A review of the structure of the AFE system suggests a marked separation between academic and resource control mechanisms and processes. If the objective of improving the system is to inject quality into the debate about costs, then this separation of academic and resource controls must be reduced. The structure of control must be able to deal with academic values and financial constraints in a unified way. This argues for a national body to control AFE along the lines of the University Grants Committee. The national body must be acceptable to the institutions, be responsible for distributing resources to the institutions, and be constrained by cash limits which the national body would negotiate to balance the needs of AFE and the imperatives of national economic policy.

If we look at performance indicators without looking at control structures we are only tinkering at the edges of the problem. In the first instance, explicit performance indicators are not a prerequisite for valid decisions about resource allocation.

D W Birch and R E Cuthbert
Coombe Lodge, November 1979.

DD/RECu/LM
November, 1979.

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Background

Courses in the non university sector of Further and Higher Education are classified into five "categories of work" (1). Categories I, II and III are concerned with programmes of study at first degree or equivalent standard and above and are designated as Advanced Further Education (AFE). Categories IV and V are concerned with courses at National Diploma or equivalent standard and below and are designated as ***Non*** Advanced Further Education (NAFE). Apart from the thirty Polytechnics, AFE accounts for 30% or more of the workload in 124 Colleges of Further and Higher Education in the "public sector".

All recurrent expenditures on AFE are "pooled". Providing Authorities submit claims to the Advanced Pool (established in 1959) according to their spending on AFE. These claims are totalled and reapportioned to ***all*** Local Authorities on the basis of their school populations (for 69%) and non domestic rateable values (for 31%). Thus some Authorities are net contributors to the Advanced Pool and others make net withdrawals.

The operation of the Pool is overseen by the Pooling Committee chaired by the Department of Education and Science but with members drawn from the Local Authority Associations. The Committee's terms of reference are:

> "to consider and keep under review the arrangements for pooling educational expenditure and to make recommendations to the Secretary of State or to the Local Authority Associations as may be appropriate".

The pooling arrangements have long been the subject of controversy. The system offends against the principle that an Authority should only be committed to expenditure over which it has direct control. Moreover, as it currently operates, the size of the pool is determined in arrears and it may invite extravagance rather than economy.

In an attempt to meet some of these criticisms the Pooling Committee issued in 1972 via the Local Authority Associations a ***Memorandum on Student Staff Ratios for Advanced Level Work in Polytechnics and Colleges of Further Education*** which suggested that work in colleges should be categorised into two groups - Group I containing laboratory-based subjects and Group II comprising classroom-based subjects. For each group a student staff ratio (SSR) band was recommended as a target. These bands were:

Group I : 7.5 - 8.5
Group II : 9.2 - 10.2

In 1972 the Pooling Committee had no power to control expenditure and the Memorandum was simply an exhortation. The Education Bill currently before Parliament would give the Secretary of State power to fix a maximum sum available to the Advanced Pool from the financial year 1980 - 81. Exactly how this "capped" pool would be disbursed to Authorities and, thence, to colleges is not yet clear but it seems likely that it will relate to agreed unit costs. Insofar as lecturers' salaries account for between 60% and 70% of total recurrent costs in Further Education, agreed claims will be very much a function of SSRs

Indeed, at the request of the Local Authority Associations the Department of Education and Science is now moving towards the collection and publication of data on SSRs for *all* Colleges of Further Education for *all* "categories of work" (i.e. NAFE as well as AFE). Thus this mechanism is now and is likely to remain in the future, the most important single

resource utilisation "performance indicator" in the "public sector".

The Student Staff Ratio

As explained in the Pooling Committee Memorandum and later illustrated in a booklet published by the Councils and Education Press (2) the SSR currently operated in the public sector is defined as follows:

If S = the FTE (full time equivalent) students;

T = the FTE teachers;

ACS = the 'average class size' provided;

ALH = the 'average lecturer hours' (i.e. the typical class contact provided by a FTE teacher); and

ASH = the 'average student hours' (i.e. the typical taught hours of a FTE student)

Then the teaching establishment required by a college is given by:

$$T = \frac{S}{ACS} \times ASH \times \frac{1}{ALH}$$

$$\text{Whence the SSR} = \frac{ACS \times ALH}{ASH}$$

Part time students are converted to FTEs by aggregating part time students taught hours and dividing them by the typical taught hours of a full time student whilst part time teachers are converted to FTEs by aggregating their class contact hours and dividing through by 18.

Now if we wish to raise the SSR (and this, presumably would be an objective of an administration concerned to constrain public expenditure) we arrive at the "Rules" for successful performance:

Enrol as many students as possible;

Teach the students in timetable situations for as few hours as possible; (3)

Teach the students in as large a class size as possible; and

Require the teachers to provide as much class contact as is allowed by their conditions of service.

It has been shown elsewhere (4) that these Rules are in direct conflict with those derived from the Burnham agreements (5), the conditions of service jointly agreed between the Local Authority Associations and NATFHE (6) and the normal establishment practice of many, if not most, Authorities. Under these various arrangements because:

(i) many Authorities determine a college's teacher establishment by reference to either last year's actual teacher class contact hours or next year's forecast class contact hours;

(ii) the salaries of Principals, Vice Principals and Heads of Departments are related to aggregated "student hours in college" weighted by academic level; and

(iii) the higher the academic level the greater the number of senior teaching posts and, moreover, the higher the grade of the lecturer - the fewer class contact hours he is required to provide.

self interest dictates the following:-

Enrol as many students as possible to courses at as high an academic level as possible;
Teach the students for as many hours as possible; and
Teach students in classes which are as small as possible.

These Rules are not in line with the remedial and "second-chance" nature of much of Further Education nor, for that matter are they in line with what little we know about effective learning situations. Furthermore, it is a moot point whether the role of teachers *qua* teachers is more or less difficult when confronted by students following advanced courses. Certainly the message coming across to the colleges does not encourage a search for more economic modes of operation. A rethink of the underpinning philosophy of the Burnham and conditions of service "package" is, perhaps, overdue as is some attempt to resolve the inconsistencies between it and the implicit (if not explicit) purpose of the SSR performance indicator.

Meanwhile the SSR is not without its critics. A fundamental objection to the SSR and, indeed, to most LEA establishment practice is the focus on conventional timetabled class and laboratory situations. As currently defined the SSR conversion of part time to full time equivalent students is by comparison of "eyeball to eyeball" classroom contact of students with teachers. Again, most Authority practice is to establish teaching

posts by reference to forecast teacher class contact. Under normal conditions of service the majority of teachers in Further Education are required to spend about 20 out of the minimum of 30 hours in college per week in front of a class. The use of the balance of 10 hours is not defined and may be spent in preparation, marking or in any of the many tasks in the interface between teaching and administration. Where learning situations are developed which require more than the normal amount of out of class activity the only way to proceed with many Authorities is to negotiate class contact "remission". The implication is that the only form of respectable teaching is that which involves the teacher standing in front of his class. Neither the Burnham and conditions of work "package" nor the SSR as currently defined can cater with the trend towards "open learning",with students working with the support of teachers but at a distance from the college and deciding upon their own patterns of attendance.

There is a case for moving the SSR measurement process away from class contact and taught hours towards a head count of students under whatever classification seems appropriate - modes of attendance, discipline area, academic level, open learning. This head count might then be converted to FTEs by nationally determined conversion factors which could incorporate weights reflecting Society's priorities: if so these weights might be expected to change over time and would not be solely concerned with academic level.

According to Pratt (7) the cardinal sin of the SSR as defined by the Pooling Committee is that it is a "grossly incompetent" confusion of inputs (staff and students) with outputs (quality of learning, education or whatever). Now the Pooling Committee's definition of SSR is a kind of measure of a kind of output since "student places" can be regarded as an output even if they are FTE students and not actual people (8). Of course, the indicator has its limitations, of which the more careful proponents of this approach are well aware (9). Pratt's complaint is that the limitations of the indicator are not well understood by those who use it in making decisions about resource allocation. The problem is neatly identified by Kronig (10)who distinguishes between "economic return" and "thrift":

> "An 'economic return' means an attempt to achieve an optimal relationship between expenditures and the resulting returns, 'thrift' means the avoidance of any expenditure which is not strictly necessary, or not necessary at that particular level".

He goes on to argue that in universities and colleges

> "the economic return principle disappears for lack of measurable income items, and thrift becomes the dominant consideration".

Pratt's argument seems to be that while politicians and bureaucrats strive merely to achieve thrift, we (the educationists ?) must substitute the principle of economic return as the main aim. To do this, he says, we must take quality into account, and the way to achieve this is to develop alternative performance criteria which are related to the fundamental purposes of education. At this point the argument seems to have gone astray. If the performance monitoring process cannot cope with the SSR criteria it is unlikely to cope with a range of more complex qualitative criteria. In any event the performance indicator however constructed - simple or complex - cannot be discussed sensibly outside its process and structure context.

The Traditional Management Control Model

Anthony et al (11) define management control as "the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organisation's objectives". Others tend to distinguish between planning (the setting of goals) and control (matching up to the goals that have been set). Whichever definition is used management control is the domain of formalised systems in organisations and these systems tend to be designed along the lines indicated in *Figure 1*.

FIGURE 1

THE TRADITIONAL CONTROL MODEL

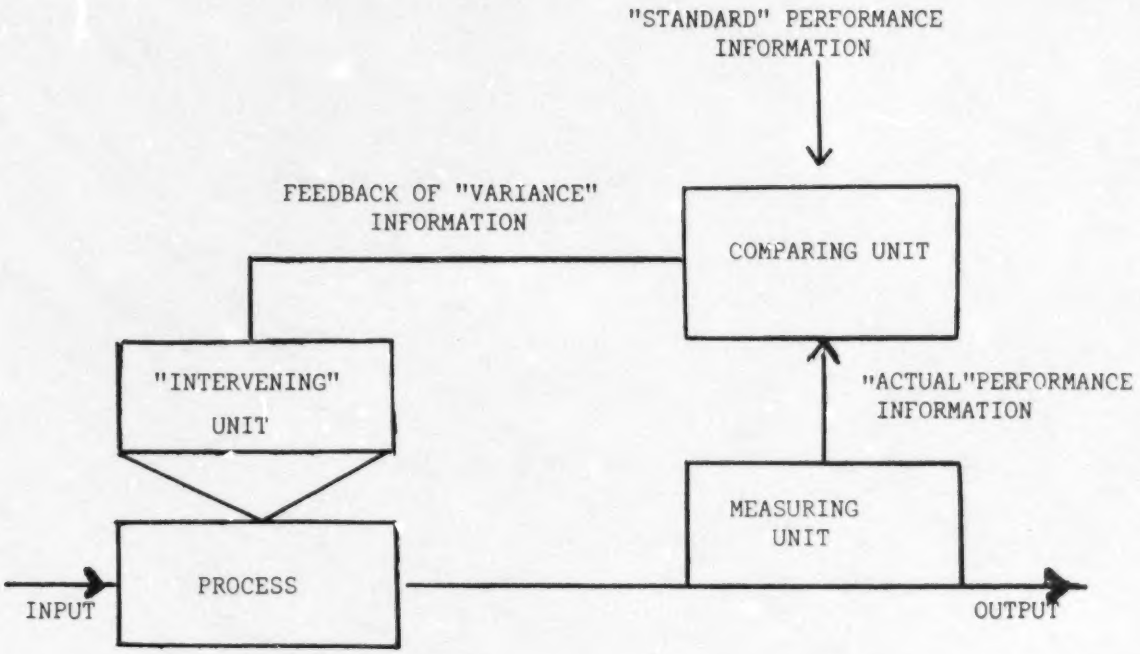

Figure 1 assumes:

(i) there is a "standard", corresponding to the effective and efficient performance of the organisation's objectives;

(ii) actual performance can be measured;

(iii) when actual performance is compared with the standard and variance information is fed back, this information can be used to intervene in the process so as to eliminate unwanted differences.

There is no doubt that this model of control has been successful in the design of machines but organisations involve people. The proper functioning of the control system presupposes, firstly, that these actors will send and correctly receive the appropriate messages (i.e. will communicate) and, secondly, that they will be motivated to act according

to the logic of the model.

Furthermore, the model assumes that standards can be identified, performance measured and the feedback information can be used to put the organisation back on target. How far are these assumptions realistic in an educational context? Education, particularly higher education, is characterised by widely divergent and strongly held views concerning objectives, an inability to identify and trace all the outcomes and no real understanding of the relationship between inputs and outputs. In other words the environment in education is by no means ideal for the successful operation of the traditional control model. However, education is not alone in its failure to meet the basic conditions. Often these are not met in industrial contexts let alone most of the range of other public sector activities - health, social services, law enforcement. This has not prevented serious attempts to enforce, for example, Planning, Programming Budgetting Systems (PPBS) deeply wedded to the traditional model of control on both sides of the Atlantic.

An Alternative - Political Negotiation and Control

Blanket application of the traditional control model is likely to do more harm than good. Nevertheless there are likely to be parts of most organisations where the traditional model may be appropriate. The SSR (particularly if it was measured from a base of head counts rather than classroom contacts) is a useful device when it is applied to large aggregations such as colleges or broad discipline areas. There is no reason to suppose, however, that all parts of a college or all sections within a discipline area should necessarily operate the same SSR. It ought to be a matter of academic judgment *within* a college as to which parts need to be nurtured and cushioned with extra resources.

Geert Hofstede (12) argues that the essence of situations where the traditional control model is inappropriate is that they are political and decisions are based on negotiation and judgment.

> "What this means is that policy is not merely composed of rational elements; its main ingredients are ***values***, which may differ from person to person, and ***norms*** which are shared within groups in society but vary over time and from group to group. It makes little sense to speak of control processes here, at least in the formal sense in which such processes are described in cybernetic situations. It does make sense to speak of a control ***structure***, taking into account the power positions of the various parties in the negotiations. Within this structure, we may study the control games played by the various actors. Once resources are allocated, there is no automatic feedback on the effectiveness of their use; the only controls possible are whether the resources were really spent and if no funds were embezzled. Beyond that, it is a matter of trust in those in charge of carrying out the programmes- the real control takes place through the appointing of a person to a task. Activities once decided upon will tend to perpetuate themselves; corrective actions in the case of ineffective or inefficient activities are not automatically produced by the control system but ask for a specific evaluation study; deciding upon such a study is a political act which may upset an established balance of power".

Towards a Resolution of the Problem in AFE

Pratt's prescription of bigger and better performance criteria is misguided - his diagnosis that quality and effectiveness must be made to count more heavily in resource allocation holds good however. How is it that quality can be ignored? Consider the management of non university higher education. Colleges and polytechnics are enmeshed in a complex web of relationships with other external agencies. From the college's perspective some of these relationships are ***imposed***, while others - such as those with the CNAA are at least partly ***self-set*** since college representatives tend to dominate and determine the operation of the validating bodies. Similarly, some relationships are primarily ***qualitative***, as in the case of course validation, while others tend to be expressed in ***quantitative*** terms as when a Local Authority decides the size of a college budget. In a broad sense, some of the controls exerted on an institution are concerned with the flow of resources to and through the institution - these may be termed ***metabolic*** controls. On the other hand, there are checks and balances

on the quality of the educational process and these can be described as *functional* controls, since they relate to the primary function or purpose of the institution. The model underlying these distinctions is drawn from Vickers (13) and its implications for AFE are described more fully elsewhere (14).

If we define the system in these three dimensions: imposed - self set, quantitative - qualitative, metabolic - functional, we define two clusters of governing relations. The first cluster comprises functional controls involving students, teachers, course and subject committees, academic boards, external examiners, validating bodies, HMIS and Regional Advisory Councils. These functional controls tend also to be qualitative and at least partly self-set. The second cluster of relationships is essentially metabolic involving heads of departments, Principals and Directors, governing bodies, LEA's, the Local Authority Associations, the Pooling Committee and the Department of Education and Science. Such relationships tend also to be quantitative and imposed.

AFE gets the control that the structure of the system dictates. To inject quality into the debate about costs, to substitute the principle of economic return for thrift, institutions must sacrifice some of their functional autonomy in exchange for a better (more reasoned) resource allocation. What is required is a system of control which can unify functional/academic decisions and metabolic/resource decisions. The way to achieve this is not to search for bigger and better sets of decision and performance criteria which can then be grafted on to the present dichotomy. Rather, the way ahead is to change the structure of decisions and create processes which can cope not only with the economic-rational but also sense and map "values" and "norms". For AFE this means the creation of an AFE Council which would work within defined budget limits and be staffed primarily with members and officers sympathetic and acceptable to the academic community. This AFE Council would embody both academic and financial authority and would offer the possibility of a resource allocation process in which quality would count and decisions would be more likely to be seen as valid on all sides. Yet such validity would not necessarily require explicit criteria

to justify decisions and to control performance. If the decision making process is acceptable, it is much easier to account for specific decisions on ad hoc grounds and there is less need to search for a set of general criteria to be universally applied.

The pursuit of a set of all-embracing performance criteria in higher education is subject to at least three major difficulties. The first is that it is not at all clear that objectives can ever be specified loosely enough to be broadly accepted, yet tightly enough to be operationally useful. The second difficulty is that, even if it is possible to specify a set of objectives it may not be desirable. Tight definitions might squeeze out of the system that valuable diversity of view which can happily exist amid the present confusion (15). Thirdly, even if it were possible and desirable to develop comprehensive performance criteria it would take a very long time and the results would be comprehensible only to a few. For an illustration of the complexity of recent efforts see Cameron (16). Whatever else we can say about them, control procedures ought to be intelligible to these who are asked to communicate, and be motivated by, their messages.

Summary

Currently, the most important institutional performance indicator deployed in the public sector of higher education is the SSR. As it is presently defined it is in direct conflict with the Burnham (FE) salary and conditions of work agreements and with most Local Authority establishment practice. It is a crude device but it serves a useful purpose at a sufficient level of aggregation, and it might be improved by starting from a different measurement base - student "heads" rather than classroom contact.

Education is one of the many settings where the traditional model of control is inappropriate. The solution appears to lie not in an extended search for more sophisticated performance criteria but in an examination of the political structure in which decisions are reached and power and responsibility assigned and withdrawn. The chances are that we shall discover that the structure and process is far from being

scientifically rational but more like Wildavsky's (17) budgetting:

> "an incremental process, proceeding from a historical base, guided by accepted notions of fair shares, in which decisions are fragmented, made in sequence by specialised bodies, and coordinated by repeated attacks on problems and through multiple feedback mechanisms".

We discern a dichotomy in the governing relationships of AFE between, on the one hand, the academic, self set, qualitative, functional and on the other hand the resource, planning and control, imposed, quantitative, metabolic. The development of an AFE Council along the lines indicated above might help to bring these forces together. In any event explicit performance indicators are not a pre requisite for valid decisions about resource allocation nor are they a necessary component of "illuminative" ad hoc studies of effectiveness.

Cuthbert R.E.
Birch D.W.
Coombe Lodge, November, 1979.

Notes and References

1. ***Scales of Salaries for Teachers in Establishments for Further Education in England and Wales.*** HMSO (1978).

2. ***Assessment of Curricular Activity and Utilisation of Staff Resources in Polytechnics and Colleges of Further Education.*** Councils and Education Press (1972).

3. The Student Staff Ratio $SSR = \frac{S}{T}$

$$= \frac{Sft + Spt}{T}$$

Where Sft = Actual Full Time Students; and

Spt = Part Time Students converted to FTEs by aggregating part time students' taught hours and dividing them by the typical taught hours of a full time student.

Whence $\frac{S}{T} = \frac{Sft + Cpt\frac{(Sft)}{(Cft)}}{T}$

Where Cpt = total taught hours of all Part Time students; and

Cft = total taught hours of Full Time students.

So the Rule

> "Teach the students in timetabled situations for as few hours as possible"

should be amended to read:

> "Teach *full time* students in timetabled situations as little as possible and *part time* students for as long as possible".

4. Birch D W & Latcham J "Determining College 'Establishments' : Burnham v. The Student Staff Ratio' ***Coombe Lodge Information Bank*** No. 1396 (October 1979). ***To be published in the Journal of Further and Higher Education (1980).***

5. ***Scales of Salaries for Teachers in Establishments for Further Education in England and Wales*** HMSO (1978).

6. ***Conditions of Service of Teachers in Establishments of Further Education*** Joint Conference of the Local Authority Associations (1973).

7. Pratt J "Costs and Quality" Editorial *Higher Education Peview* Summer (1979).

8. Conceptually in the area of instruction a college makes certain educational services available. In turn students bring a variety of preparations, motivations, aspirations and abilities to their learning. Hopefully, the net effect of these interactions is some change - "value added" - in the students' characteristics. Levin H. "Measuring Efficiency in Educational Production" *Public Finance Quarterly* 2(1) January (1974) is an example of the change in students' characteristics as the appropriate measure of educational outcomes. On the other hand it can be argued that the changes wrought in students' characteristics reflect *their* learning functions and are only indirectly related to the college's production function. Thus the outcomes attributable to the college (and the college only) are the magnitude, quality and duration of the instruction patterns made available. Carlson, D.E., "Examining Efficient Joint Production Processes" *New Directions of Institutional Research 2* Winter (1975) is an example of this approach.

9. See (for example) Sizer J *"Developing Performance Indicators for Institutions of Higher Education"* OECD/CERI IMHE/GC/78.2 IMHE Topic Workshop on Performance Indicators for Institutions of HE. Paris (1978).

10. Kronig W *Performance Related Budgeting for Universities* OECD/CERI IMHE/GC/78.7 Paper for IMHE Workshop on Performance Indicators for Institutions of HE. Paris (1978).

11. Anthony R N, Dearden J and Vancil R F *Management Control Systems : Text, Cases and Readings* Irwin (1972).

12. Hofstede G "The Poverty of Management Control Philosophy" *Academy of Management Review* July (1978).

13. Vickers G *The Art of Judgment* Chapman and Hall (1965)

14. Cuthbert R E "The Relationship Between Planning and Budgeting in the Management of Polytechnics" *Sheffield Papers in Education Management No. 3* Sheffield City Polytechnic (1979).

15. "A plural society ... cannot place goals or ends for higher education in order within a context of agreed values, for in a plural society it is not certain on whose authority the cultural setting is defined. For this very reason, Universities can be seen to offer their own ideological goal - that of accepting and maintaining the tension between competing goals without burning the thread".
Goodlad S *Conflict and Consensus in Higher Education* London Hodder and Stoughton (1976).

16. Cameron K (1978) "Measuring Organisational Effectiveness in Institutions of Higher Education" *Administrative Science Quarterly* 23 December 1978 604-632.

17. Wildavsky A *The Politics of the Budgetary Process* Little Brown and Co. (1964).

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